Erratum to

LHCb Collaboration

DOI:
10.1007/JHEP10(2017)068

Document Version
Publisher's PDF, also known as Version of record

Citation for published version (Harvard):
LHCb Collaboration 2017, 'Erratum to: Measurement of the J/ψ pair production cross-section in pp collisions at √s=13 TeV [InlineMediaObject not available: see fulltext.] (J. High Energ. Phys, (2017), 2017, 47, 10.1007/JHEP06(2017)047)', *Journal of High Energy Physics*, vol. 2017, no. 10, 68.
https://doi.org/10.1007/JHEP10(2017)068

Published for SISSA by Springer

Received: *September 27, 2017*
Accepted: *September 27, 2017*
Published: *October 10, 2017*

Erratum: Measurement of the J/ψ pair production cross-section in pp collisions at $\sqrt{s} = 13$ TeV

The LHCb collaboration

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Erratum to: JHEP06(2017)047

ArXiv ePrint: 1612.07451

The measurement of the differential cross-section as a function of $p_{\mathrm{T}}(J/\psi\, J/\psi)$ was incorrectly reported in the paper [1], due to an incorrect propagation of the efficiency values in the final analysis. In this erratum, all tables and figures that need to be corrected are reported, with identical numbering and captions to those in the orginial paper. In figure 2, only the data points are changed. In figure 9, the results of templated double parton scattering (DPS) fit for $\frac{\mathrm{d}\sigma(J/\psi\, J/\psi)}{\mathrm{d}p_{\mathrm{T}}(J/\psi\, J/\psi)}$ (the left column) are changed. In table 3, the percentages of the DPS component determined with $p_{\mathrm{T}}(J/\psi\, J/\psi)$ (the first row) are changed. In table 4, the σ_{eff} values from the DPS fits for $p_{\mathrm{T}}(J/\psi\, J/\psi)$ (the first row) are changed. As a result, the values of σ_{eff} for the models considered in the analysis are between 8.8 and 12.5 mb, instead of 10.0 and 12.5 mb. None of these changes affect the interpretation of the results and the conclusions.

https://doi.org/10.1007/JHEP10(2017)068

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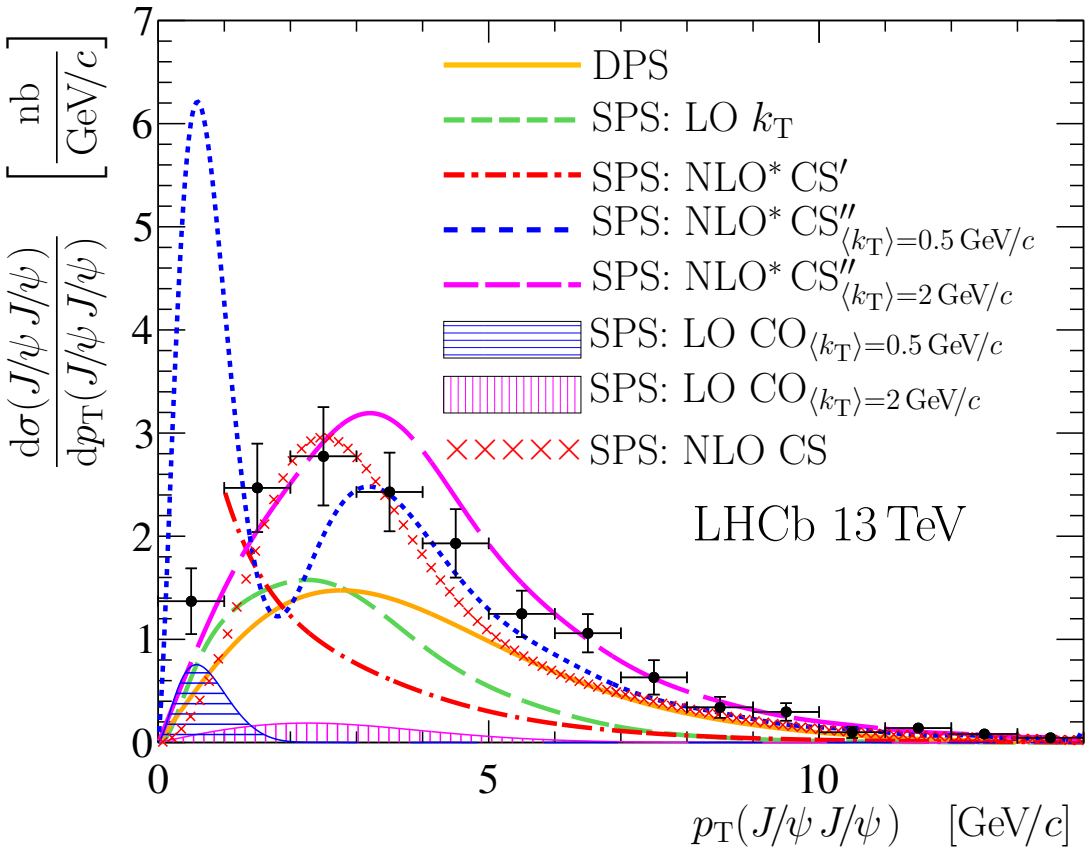

Figure 2. Comparisons between measurements and theoretical predictions for the differential cross-sections as a function of $p_{\mathrm{T}}(J/\psi\,J/\psi)$. The (black) points with error bars represent the measurements.

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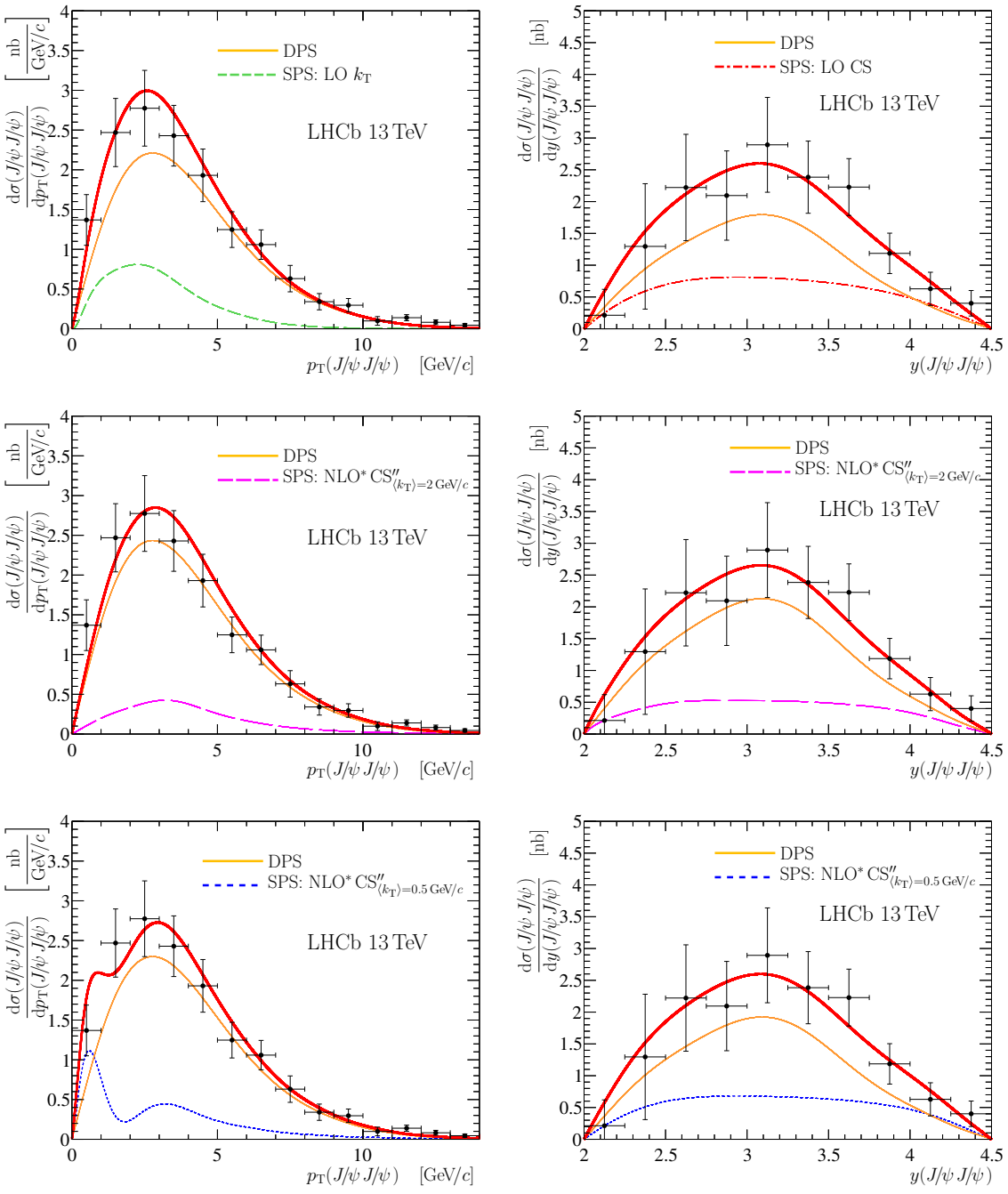

Figure 9. Result of templated DPS fit for $\frac{d\sigma(J/\psi\,J/\psi)}{dp_T(J/\psi\,J/\psi)}$ and $\frac{d\sigma(J/\psi\,J/\psi)}{dy(J/\psi\,J/\psi)}$. The (black) points with error bars represent the data. The total fit result is shown with the thick (red) solid line and the DPS component is shown with the thin (orange) solid line.

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Variable	LO CS	LO k_T	NLO* CS′	NLO* CS″ $\langle k_T \rangle = 2\,\text{GeV}/c$	NLO* CS″ $\langle k_T \rangle = 0.5\,\text{GeV}/c$	NLO CS
no $p_T(J/\psi\,J/\psi)$ cut						
$p_T(J/\psi\,J/\psi)$	—	78 ± 2	—	86 ± 55	81 ± 7	—
$y(J/\psi\,J/\psi)$	83 ± 39	—	—	75 ± 37	68 ± 34	—
$m(J/\psi\,J/\psi)$	76 ± 7	74 ± 7	—	78 ± 7		77 ± 7
$\lvert\Delta y\rvert$	59 ± 21	61 ± 18	—	63 ± 18	61 ± 18	69 ± 16
$p_T(J/\psi\,J/\psi) > 1\,\text{GeV}/c$						
$y(J/\psi\,J/\psi)$	—	—	75 ± 24	71 ± 38	68 ± 34	—
$m(J/\psi\,J/\psi)$	—	73 ± 8	76 ± 7	88 ± 1		—
$\lvert\Delta y\rvert$	—	57 ± 20	59 ± 19	60 ± 18	60 ± 19	—
$p_T(J/\psi\,J/\psi) > 3\,\text{GeV}/c$						
$y(J/\psi\,J/\psi)$	—	—	77 ± 18	64 ± 38	64 ± 35	—
$m(J/\psi\,J/\psi)$	—	76 ± 10	84 ± 7	87 ± 2		—
$\lvert\Delta y\rvert$	—	42 ± 25	53 ± 21	53 ± 21	53 ± 21	—

Table 3. Percentages of the DPS component, f_{DPS}, determined with the simple two-component fit to different distributions for different SPS models.

Variable	LO k_T	NLO* CS″ $\langle k_T \rangle = 2\,\text{GeV}/c$	NLO* CS″ $\langle k_T \rangle = 0.5\,\text{GeV}/c$	NLO CS
$p_T(J/\psi\,J/\psi)$	9.7 ± 0.5	8.8 ± 5.6	9.3 ± 1.0	—
$y(J/\psi\,J/\psi)$	—	11.9 ± 7.5	10.0 ± 5.0	—
$m(J/\psi\,J/\psi)$	10.6 ± 1.1	10.2 ± 1.0		10.4 ± 1.0
$\lvert\Delta y\rvert$	12.5 ± 4.1	12.2 ± 3.7	12.4 ± 3.9	11.2 ± 2.9

Table 4. Summary of the σ_{eff} values (in mb) from DPS fits for different SPS models. The uncertainty is statistical only, originating from the statistical uncertainty in σ_{DPS} (and $\mathrm{d}\sigma\,(J/\psi\,J/\psi)/\mathrm{d}v$). The common systematic uncertainty of 12%, accounting for the systematic uncertainty of $\sigma\,(J/\psi\,J/\psi)$ and the total uncertainty for $\sigma(J/\psi)$, is not shown.

References

[1] LHCb collaboration, *Measurement of the J/ψ pair production cross-section in pp collisions at $\sqrt{s} = 13$ TeV*, *JHEP* **06** (2017) 047 [arXiv:1612.07451] [INSPIRE].

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